AMENDED SPECIFICATION

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(54) EMULSIFIED DISINFECTANT COMPOSITIONS

(71) We, ASPRO-NICHOLAS LIMITED, a British company, of 16, Berkeley Street, London, W.1., England, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to emulsified disinfectant compositions.

It has long been known to use castor oil soaps as an efficient and relatively cheap source of emulsifier, particularly in the disinfectant industry. It has been found however that a more efficient and less costly emulsifier for non-creosotic pine oil disinfectants can be produced by replacing part of the castor oil soaps with a soap of a fatty acid component (as hereinafter defined).

Accordingly the present invention provides an emulsified non-creosotic pine oil disinfectant composition containing as an emulsification component less than 7% by weight of an emulsifier comprising a mixture of soaps of castor oil and a fatty acid component which has a melting point of less than 35° C in a ratio by weight of from 75:25 to 25:75, the said fatty acid component comprising up to 100% by weight of a mixture of oleic and linoleic acids in a ratio by weight of from 5:95 to 95:5, from 0 to 15% by weight of other fatty acids, and from 0 to 50% by weight of rosin acids based on the weight of the fatty acid component.

Preferably the mixtures of oleic and linoleic acids are used in percentages ratios by weight of between 40:6/ and 60:40. As hereinbefore mentioned the fatty acid component may also contain proportions up to 15% by weight of other fatty acids such as palmitic, stearic, cis-5,9 - octadecadienoic and cis - 5,9,12 - octadecatrienoic acids and up to 50% by weight of rosin acids such as pimaric, abietic, dihydroabietic and tetrahydroabietic acids, based on the weight of the fatty acid component.

The aforesaid fatty acid mixtures are most readily available in a class of materials known as tall oils and soya bean oils, the former oils being preferred. Suitable commercially available fatty acid mixtures for use as the fatty acid component in the present invention include those sold under the trade names Vantal A.1, Vantal A.4, Vantal D.30, Vantal D.45, Vantal F and Vantal G (sold by British Oxygen Chemicals Limited) and OULU 102 and Unitol BKS (sold by Berk Chemicals Limited). (" Vantal " and " Unitol " are registered trade marks).

The castor oil component of the emulsifiers used in accordance with the present invention may of course be replaced by a corresponding weight of castor oil fatty acids (i.e. primarily ricinoleic acid) which are the acids actually released and saponified during the saponification of castor oil.

The castor oil and fatty acid soaps of the emulsifiers used in accordance with this invention are water-soluble soaps such as the lithium, sodium, potassium and amine soaps, and are produced in a manner well known in the art.

The emulsifiers used in accordance with this invention surprisingly have been found to possess a much greater emulsification power than that which would have been expected from the mere addition of the emulsification powers of the soaps of castor oil and the fatty acid component. In fact one would have expected that the emulsifiers used in accordance with the present invention would be less effective than castor oil soap alone (since the emulsification power of the fatty acid component soap is less than that of the castor oil soap) whereas the contrary has been found to be the case. For example, in certain commercially available

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non-creosotic pine oil disinfectant compositions a minimum of 7% by weight castor oil emulsifier is used whereas the same composition may be successfully emulsified using only 4 or even 3% by weight of an emulsifier of the present invention.

The emulsifiers proposed in accordance with the present invention may be used in any non-creosotic pine oil disinfectant compositions for the emulsification of essential oils, terpenes, terpene alcohols, phenols, halogenated xylenols and perfumes. The disinfectant compositions may contain small amounts, for example 2% by weight or less, of emulsion stabilisers such as alkali metal and ammonium chlorides and carbonates but these are not essential unless it is desired to use a very low percentage of emulsifier in the composition. It is, however, preferred that the pH of the compositions of the invention should be above 9 and preferably between 9 and 11.

The following Examples will further illustrate the invention and the improved emulsification properties of the emulsifiers proposed in accordance with the invention:—

Example 1 (Comparative Example).

For comparison purposes disinfectant compositions having the following ingredients were prepared: —

	% by weight			
	I	II	III	IV
Parachlormetaxylenol	2	2	2	2
Pine Oil	3	3	3	3
Sodium Chloride	0.1	—	0.1	0.1
Caster Oil (as sodium soap base)	6	6	—	—
Tall oil fatty acids (as sodium soap base)	—	—	7	14
Water to	100	100	100	100

Composition I was a clear solution but on submitting it to 5 cycles of the freeze/thaw test (freezing to −10° C and then thawing to 22° C) it became cloudy, demonstrating that the castor oil soap emulsion was unstable, even with the addition of 0.1% by weight sodium chloride as an emulsion stabiliser.

Compositions II, III and IV were all unstable emulsions even though, in composition IV, 14% by weight tall oil fatty acids and an emulsion stabiliser were used. The pH of all the compositions was greater than 9.

Example 2.

The following disinfectant compositions containing the undermentioned ingredients, including the emulsifiers proposed in accordance with the present invention, were prepared:—

	% by weight				
	V	VI	VII	VIII	IX
Parachlorometaxylenol	2	2	10	2	10
Pine Oil	3	3	3	3	3
Sodium Chloride	—	—	—	0.1	0.1
Emulsifier (as sodium soap base)	6	5	4	4	4
Water to	100	100	100	100	100

The emulsifiers used in compositions V to IX were as follows:—

Composition V & IX—Castor oil: Tall oil fatty acids=70:30

Composition VI & VII—Castor oil: Tall oil fatty acids=60:40

Composition VIII—Castor oil: Tall oil fatty acids=50:50

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The emulsifiers were prepared by first saponifying the castor oil with caustic soda and adding to the resultant castor oil soap the tall oil fatty acids and caustic soda in stochiometric proportions. In each of the compositions, the pH was greater than 9. All of the compositions were clear solutions and all remained stable even on submission to 5 cycles of the freeze/thaw test described above.

In Examples 1 and 2, the tall oil fatty acids used were those obtainable under the trade name Vantal A1, the primary fatty acids of which were oleic (33% by weight), linoleic (41% by weight) and cis - 5,9,12 - octadecatrienoic (12% by weight).

Example 3.

Compositions were prepared in the same manner as the compositions in Example 2 except that the tall oil fatty acids used were those available under the trade name OULU 102 (39% by weight oleic acid and 57% by weight linoleic acid). Compositions stable to the freeze/thaw test were obtained.

Example 4.

Compositions were prepared in the same manner as Example 3 except that UNITOL BKS (49% by weight oleic acid and 44.5% by weight linoleic acid) was used in place of the OULU/102. Stable compositions were again obtained.

Example 5.

Compositions were prepared as in Examples 2 to 4, except that the parachlorometaxylenol was replaced by metachloroorthophenylphenol or dichlorometaxylenol. Similar results were obtained.

In the foregoing Examples 2 to 5, by comparison with Example 1, it can be seen that a lower percentage by weight of the emulsifier can be used than was hitherto possible when caster oil soap alone was the emulsifier. A further advantage resulting from the use of the emulsifiers proposed in accordance with the present invention in non-creosotic pine oil disinfectant compositions is that dilutions of the latter in hard water are less prone to limesoap precipitation than are the prior art compositions emulsified with castor oil soap alone.

WHAT WE CLAIM IS:—

1. An emulsified non-creosotic pine oil disinfectant composition containing as an emulsification component less than 7% by weight of an emulsifier comprising a mixture of soaps of castor oil and a fatty acid component which has a melting point of less than 35° C, in a ratio by weight of from 75:25 to 25:75, the said fatty acid component comprising up to 100% by weight of a mixture of oleic and linoleic acids in a ratio by weight of from 5:95 to 95:5, from 0 to 15% by weight of other fatty acids, and from 0 to 50% by weight of rosin acids.

2. A composition as claimed in Claim 1, wherein said ratio of soaps of castor oil and fatty acid component is between 40:60 and 60:40.

3. A composition as claimed in Claim 1 or Claim 2 wherein the fatty acid component is a mixture of tall oil or soya bean oil fatty acids.

4. A composition as claimed in any one of Claims 1 to 3, comprising as an active ingredient thereof parachlorometaxylenol, metachloroorthophenylphenol or dichlorometaxylenol.

5. A composition as claimed in any of claims 1 to 4 containing up to 2% by weight of an emulsion stabiliser.

6. A composition as claimed in Claim 5 wherein said stabiliser is an alkali metal or ammonium chloride or carbonate.

7. A composition as claimed in any one of Claims 1 to 6, having a pH of at least 9.

8. A composition as claimed in Claim 1, substantially as described with reference to any one of Examples 2 to 5.

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